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ETHERIZATION—A COMPENDIUM OF ITS HISTORY, SURGICAL USE,
DANGERS, AND DISCOVERY.

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THE astronomer Leverrier calculated the direction and rate of travel of a star, and pointed to its place in the heavens. A star appeared; yet astronomers tell us that this was not his star, that its rate of travel was other than had been predicted by Leverrier. No other appeared, exactly to fulfil the astronomer's calculations. Yet Leverrier is great, and his name is familiar.

Professor Schonbein converted cotton into a new vehicle of sudden force. The belief that gun cotton might be cheaply used for purposes of offence or of defence, gave the name of Schonbein a currency in all parts of the civilized world, and to gun cotton the position of one of the discoveries of the age.

The French experimenter has attached his name to the Daguerreotype, and this, too, is great, although a mere luxury when tested by its applicabilities to the necessities of man.

Few will dispute to these inventions and discoveries the epithet great, compared with others of the day; and yet their greatness is of very different character. What, then, shall be considered a test of greatness in discovery?

A writer upon patents has said that an invention is entitled to protection from the law, when it materially modifies the result produced, or the means by which it was produced; that a patent right is due to novelty in a machine producing an old fabric in a new way, or to the manufacture of a new and very different fabric, resulting from a slight change in the machine; in other words, to novelty in the combined result of means and end. This distinction, if not law, is apparently just; and I should, in like manner, call an invention great, in proportion to the combined amount of mind invested in its production, and of its intrinsic ability to minister to the supposed or real comfort and well being of the race.

What, then, is the character of the discovery of etherization? And it is not idle nor superfluous to examine definitively the claims of this in-

vention. I shall presently show that there are regions where the use of ether is still unknown, or its efficacy doubted; and there have been those who maintained that a certain good fortune attended its discovery, which in a measure abated its claim to greatness.

The following position is, I believe, quite tenable.

Ether is capable of producing, with very rare exceptions if there be any, complete insensibility to pain; with discomfort to the patient in only a part of the cases; this discomfort being trifling compared with the pain of an incision an inch in length.

What is pain, which the race has ceased to know in its more formidable phase, which in another age will be remembered as a calamity of rude and early science? Pain is the unhappy lot of animal vitality. It respects neither condition nor external circumstances. In the countless generations which lead us step by step into the remote ages of antiquity, each individual has bowed before this mighty inquisitor. It has borne down the strongest intellect, and sapped and withered the affections. The metaphysician finds in it the secret spring of one half of human action; the moralist proclaims it as the impending retribution of terrestrial sin; the strongest figure of the Bible condemns man to eternal flames; and yet this "dreaded misery, the worst of evils," now lies prostrate at the feet of science. Pain is encountered at man's option, and the nerves fulfil their functions only with the connivance of the intellect.

One hundred years ago, a lecturer proved that the discoverer who had subdued the lightning was not an impious man. The modern lecturer may proclaim that the greatest of discoveries has deprived terrestrial fire of its terrors; that man was not born to pain; that physical pain is an accident of existence, and not the mundane retribution of transgression.

The practical employment of etherization ensued upon the conference of two individuals. One of these, retreating to the privacy of his own apartment, placed his watch upon the table, and applied the ether to his mouth. Eight minutes of complete obliviousness now elapsed, and he awoke excited with the purpose of testing the degree and quality of this new somnolency, with reference to his peculiar art. For some hours the confirmation of certainty was delayed, and the future discovery hung upon a slender thread. Public wayfarers inclined no sympathetic ear to the necessities of a discoverer, and several diplomatists sent to bribe some chance foot-passenger to lose a tooth for an equivalent of five dollars, returned without negotiating. Towards nine o'clock, the inmates of the establishment were aroused by the arrival of a patient. Yet he, recognizing in the dental art only the substitution of one pain for another, despairingly inquired if mesmerism was not available in such ordeals. Here, then, was the long-wished-for opportunity, and complete unconsciousness crowned the experiment with success. It is quite probable that the world will not remember who this individual was, and yet it is true that the whole discovery of which we are now speaking, exhibited its first authentic effort when it annulled the pain accompanying the lesion of the little nerve that animated his defective molar.

It is worth while here to ask, what was the position of the discovery at this time? A tooth had been painlessly drawn, and, at a previous time, an irritation of the pulmonary air tubes had been alleviated, with alleged insensibility, by the inhalation of a subtile vapor. Here were two facts, insufficient for the most hasty generalization, circumscribed in their bearing, and showing, not that every person could be affected in a similar manner, bearing not upon vitality at large, but upon two specimens of it as modified in these two individuals; and proving, at the most, that animal vitality could be thus affected in two instances; and not that it could be in all instances. Besides this, the wholly different question of danger was not yet affected by evidence. If these two cases showed that insensibility could be thus effected without danger, two or three previous cases showed, with equal clearness, that insensibility produced death. Knowledge, at this point, rested upon a few hypothetical facts. I confess, had I been then asked what inference I considered safe, I should have replied, "You have succeeded in two instances only, and, in view of the previous evidence upon this subject, it is quite likely, that in two more instances either you will fail to produce insensibility, or, having produced it, your patients will die." This seems to me the necessary logical conclusion upon previous evidence; and that it was the first conclusion of those who had knowledge in such matters, will be well remembered by many. I cite only the opinion of a distinguished chemist in a neighboring city, who after one or two facts of insensibility, counselled his son not to risk upon it his health. Also a letter from Sir Benjamin Brodie, one of the distinguished experimenters in physiology of twenty years ago, who, in full view of all facts that were borne across the Atlantic, at the first announcement of the discovery, and after reflection, still wrote to Dr. Chambers, "I had heard of this before. The narcotic properties of inhaled ether have been long known, and I have tried it on Guinea pigs, whom it first set asleep and then killed. One question is, whether it can be used with safety?"

This was indeed the one great question now to be decided. Another question was, can insensibility be produced in all cases? The first would justify the surgeon in trying the experiment, while the second infinitely enhanced the value of the discovery.

To settle these important questions, many instances of insensibility were needed, which were not long in offering themselves to the tenant of a largely frequented dental establishment. Each new trial added evidence in geometrical proportion, while the absence of serious mishap encouraged hope.

Here is a second point in the discovery, and I consider a second proposition to have been now pretty well demonstrated. This was, not that ether *might* produce insensibility during the extraction of a tooth, and that the state of somnolence might be unattended with danger, but that it could always produce insensibility, and that the danger was comparatively slight.

Brief inhalation may be considered as fairly tested, and the discovery fairly demonstrated, in this rapid and multiplied experience.

Analogy, the degree of insensibility, and its superficial extent, rendered it quite probable that such insensibility would prove complete and universal. An *experimentum crucis* could alone determine such a point, nor was it long delayed.

The gentleman who had conducted these experiments determined upon submitting the new phenomena to the test of a surgical operation; and there was a certain liberality of spirit which was instrumental in introducing the discovery to the Massachusetts General Hospital. Many such pretended discoveries had failed. To be a party to such public failure, was to invite an imputation of lack of judgment; and although this novelty presented peculiar and unequivocal evidence, and possessed an intrinsic worth which need have regarded no opposition, yet a spirit of liberality and of discernment is to be recognized in the attitude of Dr. Warren, who assumed the responsibility of failure, and of danger that might well seem possible to one who had not witnessed the previous experiments. Ether has not always met with equal consideration.

The operation of that day was incomplete in its results, for reasons to be hereafter indicated. The young man offered signs of sensibility, during and after a dissection which was not particularly painful. Some powerful drug already known, or even the imagination, might well have been suspected of agency in the phenomena.

On the ensuing day, a woman offered herself with a tumor of considerable magnitude in the right shoulder. A few minutes of the most complete and passive insensibility served to extirpate it. No imagination was here to be accused. The drooping lid, the head fallen on the shoulder, the stolid relaxation of the mouth, suggested no overworking of the intellect, no rapt unconsciousness, nor inspired ecstasy. The phenomena were real, familiar to daily experience; they belonged to the profoundest sleep. This operation of Dr. Hayward, first showed conclusively the power of the new agent in averting the terrors of the surgical art. The casual spectator would have remarked no expression of wonder nor unusual excitement in the by-standers at the working of this miracle. Nothing to awe or startle, marred the tranquillity of the operating room. Yet I think those present will not soon forget the conviction of those few moments, associated at this remote day with the breathless silence of the crowd, and the unwonted fumes of aromatics burned to mask the emanations from the yet mysterious agent. Cognizant of these facts, and having studied the phenomena of etherization in a number of successive experiments at the dental establishment before alluded to, I felt that there was no longer any hazard in vouching for the efficacy of ether, and on November 3d, I read a memoir upon the subject before the American Academy of Arts and Sciences. The case of Alice Mohan, whose limb was successfully amputated by Dr. Hayward under the new influence, occurring soon after, I embodied this confirmatory evidence into a second paper read before the Medical Improvement Society of this city. This paper, afterwards published in this Journal, was the first upon the subject, and was that, I believe, which carried the news to the South and across the Atlantic.

It has been well said that the first attitude of the world towards a great discovery is incredulity, and then hostility; and this was well exemplified in the reception of this announcement at the South. Three weeks elapsed before any notice of the subject appeared. Then came the doubts of those sagacious and experienced philosophers who were not easily to be deceived.

In January, 1847, a New York Medical Journal announced that "the last special wonder has already arrived at the natural term of its existence. It has descended to the bottom of that great abyss which has already engulfed so many of its predecessor novelties, but which continues, alas, to gape until a humbug yet more prime shall be thrown into it."

The New Orleans Medical Journal says, in the same month, "That the leading surgeons of Boston could be captivated by such an invention as this, excites our amazement." "Why, *mesmerism*, which is repudiated by the savans of Boston, has done a thousand times greater wonders."

A leading medical periodical in Philadelphia, states that "We should not consider it entitled to the least notice, but that we perceive by a Boston Journal that prominent members of the profession have been caught in its meshes." It was "fully persuaded that the surgeons of Philadelphia would not be seduced from the high professional path of duty, into the quagmire of quackery, by this Will o' the wisp." What the surgeons of Philadelphia have considered the "high professional path of duty," up to a very recent date, I shall soon show.

It is fair to state that at the West, in Chicago, Buffalo, and St. Louis, the discovery received candid consideration.

The great show of dissatisfaction, emanating from those who were not contented to receive this great discovery tranquilly, and to recognize it as such, was directed against the patent right connected with its early history; but so soon as the discovery received the confirmation of European testimony, it was providentially discovered that the patent was probably invalid, and hesitation and opposition rapidly subsided, although for some weeks the enthusiasm of periodical medical literature was tempered by the character of the reports which reached us from the other side of the Atlantic.

The article before alluded to was, I believe, the first published in the European Journals. The discovery, then, rested in Europe upon the identical evidence which introduced it to the medical community this side the water, and it is interesting to observe what was the attitude there assumed towards it.

Upon the arrival of the steamer of December 1st, private notices were at once forwarded to many of the eminent surgeons in London, who zealously investigated the subject. Mr. Liston, who amputated a leg, was, on the whole, successful. Yet there, as elsewhere, doubtful cases occurred. A signal failure happened at Guy's Hospital. Other cases of incomplete success contributed to place the subject upon doubtful ground. Notwithstanding these failures, the mere chance of producing

insensibility to pain once demonstrated, aroused an inconceivable enthusiasm in the surgical world. The English Journal which announced the discovery, remarked, in an editorial, "The discovery seems to have a *remarkable perfection about it*, even in its first promulgation." "We suppose we shall hear no more of mesmerism and its absurdities as preparations for surgical operations." And of it and Liston's case it says, "it is almost impossible to discredit the statements contained in the communication referred to." A similar tone was held by other leading Journals, experiments were instituted in all the leading hospitals, and new evidence daily arrived from the provincial towns.

Information was conveyed to Paris, by a private letter, in the month of November, 1846. The incredulity of surgeons prevented its early adoption. Velpeau "politely declined" to experiment upon it. When, however, in January, the accumulation of evidence arrived from England and America, a new interest was at once excited. Experiments, the majority of which had previously been failures, were now instituted under the auspices of a Boston inhaler which soon arrived, and before the first of February, the two great surgeons, Velpeau and Roux, averred, in the presence of the two Academies, that the discovery "was a glorious conquest for humanity." The news rapidly spread through the European cities, and over the civilized world.

Once, and only once, out of the country of its birth, did a government discountenance the discovery.

In this country, where no legal form hinders any individual from purchasing a bottle of prussic acid for his own private consumption, such interference excites comment; but when we remember that a court adviser is quite like to be some one philosopher who has become too wise for innovation, an error of judgment emanating from such a source is less remarkable.

In thus detailing the early narrative of the discovery I have endeavored to present, as far as I am able, the contemporaneous and accumulating evidence of experiment, in order to show how far, at each step, new experiments were justified, and also to exhibit in this relation, the various attitudes of those who were to be the instruments of its progress. And this is important. At various points in its history those who stood between this agent of mercy and the world, those to whose lot it fell to deal out to mankind this inestimable blessing, have seen fit to refuse it to the unhappy victims of surgical art, and have condemned them to severe suffering which might easily have been avoided.

It would be illiberal to assign or to impugn the motives of those who occupy this position; nor do I conceive it would be attempted by those who know the variety and complication of the secret agencies of human action. Yet a wide influence is diffused by many such, and it is impossible to calculate how far the mass of human misery may be augmented by such opinions joined to authority.

However easy it may be for an individual or body of individuals to promulgate what they conceive to be their convictions, yet if there is a

chance of error in these convictions, and if that error tend considerably to increase the aggregate of human suffering, it will be readily conceded that the world has a right to question how far such convictions may be tenable. Fortunately for this purpose, human reason is identical in all. To establish how far etherization ought to be adopted by the world, let us re-examine the evidence in relation to its more obvious conclusions.

Ether was said, in one instance, to have produced insensibility. In another experiment, it made an individual unconscious of the drawing of a tooth. Twenty or more experiments were immediately instituted, with nearly the same effects and no accidents.

These were certainly novel and striking circumstances. They were calculated to arrest attention. They presented credentials which had a right to be examined. Ether had a right to be tried, candidly and fairly, unless it could be shown that its previous bad character forfeited all claim to further consideration. What, then, was its previous character? What is the *a priori* evidence upon the danger of ether on the one hand, or upon its narcotic power on the other? And, first, the danger rests mainly upon the evidence of the gentleman in Brande's Journal, the druggist's maid servant, and the young man of the Midland Medical and Surgical Journal; on Orfila's dogs and Brodie's Guinea pigs.

I put against these cases the hundreds of young men who had been for years harmlessly exhilarated by ether; I add to these well-known facts, the half hundred cases which occurred in a few weeks after the discovery; and re-affirm that, as far as danger goes, ether, before the end of 1846, had a right to be tested anew. Analogy fortifies this ground. It points to a state of dead drunkenness effected through the air tubes, as corresponding to a similar state effected through the stomach. Patients dead drunk had lost their legs without pain; others had come to instantaneously when alcohol was pumped out of their stomachs. Why should not the lungs become the recipient of the inebriating agent, and respiration be the resuscitating stomach pump? This analogy, which still holds good, was distinctly alluded to in the original article upon the subject of ether inhalation.

Many people had died when alcohol was not thus pumped out of their stomach; and might they not well die when the atmosphere of a room was surcharged with ether, and they asleep in it? If the argument from analogy proves anything, it proves that it is no more dangerous to be narcotized by inhaling ether, than to be dead drunk with alcohol. I hold, then, that at the time alluded to, the middle of November, 1846, neither analogy nor fact forbade the use of ether.

At this date, too, certain doubters shook their heads and talked of *mesmerism*. Now there was something in the previous knowledge of ether which widely separated it from such pretended agencies, whose phenomena are opposed to our experience of the order of nature. Ether is very different from mesmerism, and I think it must have occurred to any one who fairly investigated the subject, that it was quite possible, and even probable, that what was now affirmed of twenty cases, was,

unlike mesmerism, likely to be true from all previous evidence; though we should not expect from all, the discrimination of one, well known in the professional and scientific world, who, hearing, on the day of the first experiments, that inhalation had produced insensibility to pain, exclaimed, as conviction flashed upon him, "I believe it! It can be done! Ether will do it!"

But even mesmerism, in spite of the bad odor of repeated failure and deception, has not unfrequently obtained a candid hearing; a fact which contrasts with the philosophy that refused to give ether an impartial hearing, even after it was invested with the accumulated evidence of experience.

A hundred promiscuous cases rapidly occurred; often in the face of hundreds of spectators, not one of whom attributed the results to deception or imagination. Many of these cases were detailed in papers published by Drs. Warren, Hayward, Peirson, Townsend, J. M. Warren, Parkman, and many others, of equal credibility. The mass of evidence of authenticity swelled as it rolled onward, month after month, to every part of this country and of the civilized world; and yet in November, 1847, more than a year after the discovery, we find it stated that in one of the largest hospitals in North America ether "had not been tried at all."

How different was the attitude of the London surgeons, who, only eight weeks after the first discovery, and with far less evidence than lay at the disposal of any one this side the water, hailed the American discovery with generous enthusiasm. The gentleman to whom the communication above alluded to was sent, was kind enough to return to me the replies received from some of the leading medical men. Thomas Bell writes, "I fully intend to try it the first opportunity. The cases are very satisfactory, and the whole affair most important." Liston says, December 21, "I tried the ether inhalation to-day, with perfect and satisfactory results," and at once writes, "It is a very great matter to be able thus to destroy sensibility to such an extent without apparently a bad result. It is a fine thing for operating surgeons, and I beg to thank you most sincerely for the early information you were so kind as to give me of it." Of Liston's case of amputation, which is usually supposed to have carried with it extraordinary conviction, Sir James Clarke says, "The man said that he felt something was doing with his leg, but it was not pain." Yet he does not hesitate to avow that "it is really a marvellous thing." December 17, Richard Bright, in spite of information from Guy's Hospital that "they had completely failed to produce the desired state of intoxication, apologetically writes, "However, there must have been some want of skill in this first attempt, and I can scarcely doubt that future experience will lead to better success." Lastly, Dr. Forbes adds to the American communications Liston's case, and writes, "I have sent copies of the enclosed to all the newspapers, so that I hope all the world will soon have the great news."

Here was the effect of evidence upon the scientific mind of Europe. Now it is unquestionably very respectable to doubt. The world may not question the judgment of those who suspend their judgment. Yet there are times when doubt is sophistry and indecision culpable. Rich-

ard Bright did not delay to forward the news to Guy's Hospital, "that no time might be lost in affording so great a relief to any who might be in the unfortunate condition of being obliged to undergo a serious operation."

May not the motive of relieving human pain induce the appointed officers of public charities to ask what is the nature of this anodyne, in whose behalf united nations rise to testify? Is it supposed that one of these gentlemen would lose his own arm without invoking ether? Shall none remonstrate, when those appointed to alleviate human suffering in meting out the accumulated charities of years, virtually avow, that, having tried no experiments, and comparatively ignorant of the subject, they consider that the decision of mankind is wrong; and, therefore, they condemn, not themselves, nor yet the reasoning community who resist their influence, but their helpless hospital patients, to the horrors of the knife!

If these consequences were limited to the sphere of a few institutions, the public would have a proportionally limited interest in the subject; but the wide-spread influence which such institutions exercise upon their own section of the country, and upon the large community of which they are the scientific centre; and the indirect influence they may have exercised upon governments, render it imperative at least to exhibit the actual value of the influence they choose to exert.

[To be continued.]

MARINE HOSPITALS.

[Communicated for the Boston Medical and Surgical Journal.]

THE March number of the Medical Examiner contains an elaborate article upon "Marine Hospitals," the object of which is to demonstrate the advantages of annexing them to the naval hospital establishment of the United States; the joint concern to be under the control and supervision of the Chief of the Naval Medical Bureau, and administered by officers of his appointment—that is, Surgeons of the Navy. A formidable array of statistics is introduced, to show how *much money* might be saved by such an incorporation; and how little qualified the present physicians of marine hospitals are to conduct their trusts, on the score of their small pay. The statistics cover the period from 1836 to 1846; probably because they suit the views of the author of the paper, that the expense of marine hospitals greatly exceeds their revenue, as he is careful to close his exhibit with the latter year, when the revenue exceeds the expenditure by more than \$1000. The author does not appear to perceive that all his remarks concerning the impossibility of getting competent physicians to superintend marine hospitals at \$1000 per annum, apply with equal, if not greater force to the navy, which in his judgment contains the highest medical talent of the country; for, according to his own showing, an M.D. must serve a great many years before he attains the rank of Surgeon with precisely the same salary.

The age in which our lot is cast, is marked, above all, by fertility of expedient; and prominent among the folks of the day, and typical of the times, is a class of project-mongers, who believe that every change is wisdom; and innovation, no matter how ridiculous, indicative of manliness and independence of spirit. A profession of philanthropy and disinterestedness is made the cloak of every bald scheme, though happily it too often impairs only the vision of the projector, leaving patent to those who cannot profit by change, the emptiness and arrogance of pretension.

The present paper is but the re-vivified corpse of a similar plan, which was quietly interred by the last Congress; the chairman of the Committee of Commerce being too practical a man to be caught by its speciously projected utilities. Divested of its embellishment, the scheme is nothing more nor less, than to increase the number of *shore stations* for naval surgeons, and ultimately, perhaps, to augment their number. With this, however, we have little to do; though we have a word or two to say concerning the benefits of annexation, so laboriously, if not luminously, exhibited.

The medical establishments of the marine and naval service are essentially distinct, in their organization, mode of support, internal police, and general arrangement; the patients also are differently circumstanced; the merchant sailor's service ends with his voyage, while the naval seaman is bound to the Government for a series of years; so that it requires neither foresight nor argument to demonstrate such confusion from their incorporation, as to defeat any imaginary benefit, existing in the mind of the author, who modestly disclaims all praise for the suggestion.

Naval hospitals are now supported from the naval hospital fund, which is built up by a tax of twenty cents per month upon the pay of every officer, seaman and marine; and the additional contribution of one ration or twenty cents per day for every day's subsistence in hospital. The fund now amounts to about \$200,000, and its annual income may be assumed at about \$25,000. The author of the paper under consideration represents the annual income to the fund, at \$10,000; and as this statement illustrates the general accuracy of his statistics, it may be worthy of examination. The number of seamen, boys, marines, &c., is now fixed by Congress at 10,000; the officers of all classes are about 1500 more. All these pay the sum of \$2,40 per annum. Making the annual income, from this source alone, \$27,600; and if the number of sick in hospital be such as he represents, \$16,000 more may safely be added for the value of stopped rations. The annual income would thus be \$37,600. Even under the *peace establishment* fixed by law, at 7,500 men, boys, &c., with the 1500 additional officers, and value of stopped rations, the income would be about \$30,000. A slight error for one who deals so confidently and profusely in figures.

If the naval hospitals usually contain the number of patients exhibited in this paper (which, by the way, will be received with some caution), it is obvious that they could not contain the large additions from the merchant marine, without a previous enlargement of accommodation,

whether for physicians or patients ; especially as, besides the sick of both services, he proposes to provide a permanent home in these establishments for large numbers of those who have passed twenty years at sea. The author estimates the number engaged in the merchant service, at 160,000 men ; probably about 50,000 beyond the actual number ; and we leave it to his sagacity to determine how many of these would elect a life of idleness in his eleemosynary abodes, instead of earning a livelihood by honest industry. To effect the necessary enlargement of buildings, even on the most moderate scale, would absorb the whole fund, before the work was well begun ; and hence would create a heavy draft upon the Treasury, compared with which the annual appropriation for marine hospitals would be found a very small affair.

The idea of levying a large tax, thirty cents per day, upon merchant sailors, when admitted to naval hospitals, seems to have a peculiar charm for the author ; as it may be viewed, perhaps, as a tribute to the superior attainments of naval surgeons, *proved* by their greater pay.

So far as our knowledge extends of the respective establishments in this vicinity, we can readily believe that economy might be subserved, by reversing the proposed incorporation, i. e., by boarding the *very few* patients in the Naval Hospital, in the Marine Hospital adjacent to it. The average number in the Naval Hospital at Chelsea, since its organization, does not exceed, if indeed it amount to, ten patients per day ; for a period of nearly two years it was entirely closed ; yet the medical officers and their attendants were still on pay ; and if we were to add the salaries of these employes to the current expenses of maintaining the sick, it would destroy every argument adduced in favor of the author's plans.

Another specimen of statistical accuracy may be found in estimating the hospital fund derived from merchant sailors. Our author quotes the law which exempts men employed in fishing vessels from the tax of twenty cents per month ; and yet he *includes* these *very men* in making up his amount, mainly, it would seem, to prove the unfaithfulness of collectors, in collecting or properly appropriating the accruing moneys ; his amounts, too, are comparatively small, because he estimates the number much higher than the last official report we have seen on this subject. With such errors as we have noticed, and they are by no means the only ones we might point out, did time or space permit, it may be reasonably doubted whether there be such a difference in favor of naval hospitals in the cost of supporting the sick, as our author indicates.

It is objected that marine hospitals are supplied by contract, and that this arrangement places considerable patronage in the hands of the Collector for political purposes. But whatever force there may be in such an argument, applies equally to the naval establishments, as contracts for supplying the latter have been published within a year or two among the "public documents." This arrangement is still in force here, whatever may be the practice elsewhere.

It is quite apparent, however, that the grand design of the author is to give an artificial importance to the Naval Medical Bureau, by loading it with extra professional services, which require business tact and clerical

attainment to discharge; and to provide *permanent shore stations* for those surgeons who *seek to evade* their *proper share* of duty at sea. Whether any of the advantages contemplated by our author, would result from such an experiment, must be determined by those who are better capable of judging the Medical Bureau than ourselves, though we have our doubts upon the subject.

We are glad to learn from the author that some respectable medical officers of the navy memorialized Congress against the adoption of his favorite measures; we hope that enough men of sense will always be found to put down effectually all such attempts in future. Naval surgeons are tolerably well cared for as they now are; and we might insert a word of wholesome caution, that those reforms which tend to our own benefit at the expense of others, are more apt to disappoint their originators than injure those they are aimed at.

A project of a bill concludes the article; in the author's estimation, it is so perfect as to forbid curtailment, though of most frightful length. As it cannot be improved, Congress will be saved the labor of examination and discussion, *whenever* it may be taken up.

Our practical commercial men will smile at the crude suggestions about *tonnage duties*; while grave legislators might find subject of merriment throughout.

Those interested in the support of marine hospitals upon their present basis, require no better aid than such articles as we have indifferently attempted to show up.

The author, in the heat of his zeal in the way of reform, indulges in some discriminating remarks between the very busy men who meddle with every body's business, and those humbler folks who content themselves with fulfilling their duties; though common experience proves the latter to be the safer men. *Ne sutor ultra crepidam*, contains a germ of wisdom, which we would commend to the author's careful consideration; believing, when he derives all the benefit it is capable of conferring, he will leave the task of legislating to those whom nature has better qualified for such work.

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ETHEREAL SOLUTION OF GUN COTTON.

To the Editor of the Boston Medical and Surgical Journal.

SIR,—I am very happy to see, in your Journal of the 29th ult., that my friend Mr. Maynard has so extensively demonstrated the applicability of Professor Schonbein's ethereal solution of gun cotton to all the various surgical uses to which I alluded in my paper of the 22d.

I confess that it would have been more gratifying to my own spirit of emulation, not, I hope, an ungenerous one, to have been able myself to multiply experimental evidence of what I could only suggest. But the state of my health has been such during the past year, as to preclude any such pursuit, when other interruptions have not prevented. What-

ever merit there may be in the priority of its surgical application, I must, however, claim for myself, on the grounds which I beg leave to expose. I shall endeavor to establish this claim upon such historical evidence as I can at this moment command.

I find, upon reference to Mr. Bulfinch, Rec. Sec'y of the Boston Natural History Society, and also to Dr. Charles T. Jackson, that the solubility of gun cotton in sulphuric ether was demonstrated by him before that Society Jan. 6th, 1847—and that I was present at this meeting. This is the date of my first information upon the subject.

Upon referring to Dr. J. B. S. Jackson, I find that on the evening of the 2d of Jan., 1847, he presented me with a leg, from the foot of which I took a plaster cast. Delays, consequent upon my inexperience in working plaster, made it some days before a fit cast was obtained. Any person in the habit of making models from this article, must know very well that a considerable time is required, especially in cold weather, for them to dry after their removal from the mould. As this last was kept in the room in which I was dissecting the leg, which was warmed during but portions of the day, and then but imperfectly, the drying was necessarily very gradual, detaining me from varnishing it, two weeks, if not a longer time.

About the middle of Feb., 1847, or earlier, I sent this cast to Dr. Sargent, of Worcester. Its varnishing with this solution had been completed at least a week before I sent it. I am able to recollect this accurately, from the fact that after varnishing it, I was a long time in fitting to it a sandal as an additional ornament.

It follows, then, that the cast was varnished between the 3d week in Jan., and the end of the 1st or early in the 2d week of Feb., 1847. I am able to state this very positively, from the circumstance of my brother's returning from a southern tour at this time, while I was thus engaged as he states. It is not impertinent to add here, that the first bottle of this solution of gun cotton which I ever prepared and possessed, and from which I varnished this cast, was very thin, as my friend Mr. Maynard, who shared it with me, will no doubt remember, and consequently many coatings were required for a proper thickness of the gum. As I applied it with a little camel's-hair pencil, and had but a very small portion of each day to devote to it—being then engaged in attending medical lectures and copying copious notes—I was very slow, and, as nearly as I can remember, was about a fortnight in completing the operation.

This opens the way to my first application of the solution to surgery, after having accidentally smeared a cut on my own finger. For a statement of this, I append a letter from Mr. Samuel Hathaway, of the firm of Hunt & Hathaway—a gentleman well known in the mercantile community.

Boston, March 31st, 1848.

Mr. S. L. Bigelow.

DEAR SIR,—Upon my return from New York this morning, I found your note of the 30th; and in reply would say, I distinctly remember your applying your gun-cotton varnish to a wound on my child's hand in

the winter of 1847. I can only fix the time by the fact that it was while you were engaged in varnishing the plaster cast of a foot which you were then dissecting at your room in the house where I was then boarding. It was about this time that it was applied (I am informed by Mrs. H.) to a cut on her thumb. You applied it with a little paint brush. You spoke then of having accidentally covered a cut on your own finger with it.

Yours truly, S. HATHAWAY.

I support my claim, then, for the priority of the application of the adhesive solution of gun cotton in surgery, on these facts:

1st. The plaster cast, which was varnished between the middle of January and the fore part of February, 1847, is the only article which I ever varnished with this solution.

2d. I did not furnish my friend Mr. Maynard with it until after I had myself used it as a varnish for this plaster cast.

3d. That while engaged in varnishing this cast, I applied it three times in surgical cases—1st, upon my own person; 2d, upon the hand of Mr. Hathaway's child; and, 3d, upon the hand of Mrs. Hathaway.

To show that many of the uses to which I allude in my first paper occurred to me as early as this time, I will add a letter kindly furnished me by Dr. Sargent, who had not the least knowledge, at the time of writing it, for what purpose I desired the contained information—nor was it written, as will appear by its date, until after my first paper had gone to press.

Worcester, March 15, 1848.

DEAR BIGELOW,—Your note, asking me to relate what I recollect about the solution of gun cotton in sulphuric ether, which you showed me a year or more ago, came to hand this morning.

It was probably very early in March of last year that you showed me a very elegant kind of glue with which you were putting up some minute skeletons. You told me that it was a "combination of the two lions of the day" (I think I have even the phrase right)—a solution of gun cotton in sulphuric ether. I think you told me that the possibility of such a solution was suggested to you by Dr. C. T. Jackson. You demonstrated not only its elegance as a glue, its instantaneous hardening, and its insolubility by water, but also its applicability to simple incised wounds, holding the edges in nice apposition, and screening them from the air, while it allowed the state of things to be observed constantly. I believe that you had even the hardihood to say that such a wound on the hand might be dressed so immediately, and the patient continue all common uses of the hand and all common ablution, without inconvenience. I had a small cut on my thumb, which you dressed accordingly, drawing a little brush wet with the solution over the parts, held for the moment in apposition. I am not sure whether you suggested the same dressing for burns, or whether it occurred to me afterwards, on my brother's telling me how they dressed burns in Paris by the mucilage of gum Arabic. I think it was before all this that you sent me a plaster cast of a foot, varnished with this same solution, so as to admit of being washed. March 6th, 1847, I went to New Bedford, where I talked all this over with Dr.

Bartlett; and on my return from New Bedford, I asked you to send the doctor a bottle of the solution.

Yours truly,

JOSEPH SARGENT.

P. S.—It occurs to me that you spoke of the application of this solution to the hands as a means of protection at *post-mortem* examinations, also; and there was various other conversation on the subject, which has passed out of my mind, though I doubt not it might be recalled.

J. S.

Had I been aware of the various and extensive use which Mr. Maynard had made of this solution, I should have alluded to it in my first paper, as a matter of courtesy to him, and also as a matter of scientific interest. I did know, as I have often stated to others, that he was experimenting as well as myself, but was not aware of the extent of his field—my own ill health, and the interruptions alluded to, throwing me more out of the atmosphere of social medical intercourse than it is my wont to be.

As I have entirely forgotten the substance even of my earliest conversation with Mr. Maynard upon this subject, as also that which occurred when I gave him of my first bottle of the solution, I cannot state *positively* that I informed him of my having used it surgically, although I have always been most firmly of the opinion that I did. I am therefore willing to admit that he may even have made the surgical application of it, independently of any information from me, though I had already, at this time, made such use of it three times successively, as above shown.

Worcester, April 1st, 1848.

SAMUEL L. BIGELOW.

Note.—March and a part of April, 1847, I spent with Dr. Sargent, in Worcester. April 25th, I accompanied a sick friend on a journey to the South. On my return in July, I immediately entered upon arduous duties at the Children's Infirmary—*supplying two vacancies*, and writing, at the same time, an elaborate medical essay (upon tubercular meningitis). After leaving this institution in August, 1847, completely worn out, I spent a few weeks in the country. From the time of my return until I re-commenced, during the past winter, my experiments with the adhesive solution of gun cotton, my health has been such as to unfit me for the vigorous prosecution of any scientific pursuit, to which Drs. Jacob Bigelow and J. B. S. Jackson can testify. I make this statement at length, that it may not appear that a loss of interest had induced me to abandon in a measure the pursuit during this time.

SURGICAL CASES TREATED BY MAYNARD'S ADHESIVE LIQUID.

To the Editor of the Boston Medical and Surgical Journal.

FOR more than a year I have been making experiments with the adhesive solution of prepared cotton, some account of which I lately communicated to the readers of your Journal. The cases in which this new adhesive liquid has been surgically applied, have been over a hundred. Some of

these cases I propose to communicate, from time to time, to you for publication. As you have but a small space in the *Journal* of this week that can be appropriated to my purpose, I shall, at this time, speak only of two or three cases, and of these very briefly. Previous to the month of April, 1847, I had used the new plaster in many minor cases of surgery. These cases were important, as they proved the value of the new dressings with which they were treated, but beyond this they offer nothing of interest.

The first case of particular interest, and which is worthy of being recorded, is the following. About a year ago a mechanic came into the office where I was studying, and stated that one of his fingers had been crushed by the fall of a bar of iron upon it, and that it must be amputated. On examining the finger, which was the middle one of the left hand, I found that the flesh had been extensively torn and lacerated, and that the bone had been laid bare. As no proper care had been taken of the wound, it was studded in many points with unhealthy or fungous granulations. Believing that the finger might be saved if properly treated, I refused to amputate it, and proceeded to dress it with the adhesive liquid. The morbid granulations were touched with the nitrate of silver, and the wound thoroughly cleansed. Having prepared a sufficient number of strips of cotton cloth, I attached the end of one of them to the palmar surface of the finger by means of the adhesive liquid. The strap was then carried over the wounded finger in such a manner as to restore the parts to their natural position, and its free extremity was attached to the opposite side of the finger. Other straps were applied in the same manner, until the finger was surrounded with a succession of these adhesive straps. In the course of a few minutes the dressings became dry by the evaporation of the ether contained in the adhesive solution, and constituted a firm and inelastic casing to the wounded finger. The patient expressed great relief from the almost constant pain he had suffered since the date of the injury, and on the next day he resumed his employment, which was that of a carpenter. Expecting that suppuration would take place in the wound, and that pus might accumulate under the dressing and give pain, I gave the patient directions to puncture, with a common pen-knife or needle, that part of the bandage where the pus might show itself. I also directed him to loosen or even remove the dressing by a pen-knife, in case the finger should swell and cause insufferable pain, and to report to me the condition of his wound in three or four days. I heard nothing from him for the space of three or four weeks, when I learnt from him that he had experienced no pain or trouble in this finger since it was dressed by me, and that the dressing had never been removed until the wound had perfectly healed.

The next case treated by the new adhesive liquid, that is worthy of notice, was that of a gentleman who received a kick from a horse in May, 1847, on the front of the right leg below the knee. The flesh was badly lacerated, and the tibia exposed. The patient suffered much pain, and expressed himself as unable to move his limb. The wound was dressed, in the course of an hour from the time it was inflicted, in the following

manner. The parts were first cleared from blood, the edges of the wound were placed in near apposition, and the whole wound was moistened with a thin coating of the cotton solution, by means of a hair pencil. A thin layer of raw cotton was then laid over the surface and agglutinated by a fresh addition of the adhesive solution. The integuments were thus supported and protected, and the patient was enabled to walk immediately without much trouble. In this case suppuration took place, and the bandages were occasionally removed and re-applied. The wound healed favorably, and the patient was not confined any day to his house.

J. PARKER MAYNARD.

[To be continued.]

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON, APRIL 19, 1848.

American Medical Association.—The next meeting of this Association—or, rather, its first annual meeting under its present title—takes place in Baltimore, the first Tuesday in May next. The names of many of the Delegates appointed, in different parts of the country, have been published in this Journal, but it is impossible for us to give them all. The attendance must, from present appearances, be very large, and great good may be anticipated from the friendly meeting of so many of the profession from distant and opposite portions of the Union. We are requested to call attention to the following Resolutions, adopted on the formation of the Association, in Philadelphia, last year.

“Resolved, That the Delegates of every society or association represented in this body, be requested to send to the secretaries the form of organization or act of incorporation, and constitution of their society or association, with a list of its members.”

The documents called for by this Resolution, may be sent either to Dr. Stillé, Philadelphia, or to Dr. Dunbar, Baltimore.

“Resolved, That the delegates to this Convention be requested to ascertain, as far as practicable, and report to the next annual meeting, the number of practitioners of medicine in their respective States—designating the number who may have received a diploma from a medical college, the number who may have been licensed by a medical society, and the number who practise medicine without any authority whatever.”

We are also informed, that book publishers, authors, instrument makers, chemists, apothecaries, &c., who may have any new book, instrument, chemical preparation, or other similar matter, which they may wish brought to the notice of the Association, may send such articles, by the 30th of the present month, free of expense, to the Chairman of the Committee of Arrangements, Prof. Geo. C. M. Roberts, M.D., Baltimore, who will bring them to the notice of the members, and hold the articles subject to the order of the owners.

The Massachusetts Medical Society.—A difficulty has existed in bringing within the embrace of this Association, all the well-qualified physicians of the Commonwealth. Some have not liked the payment, it is averred, of an annual tax of three dollars—particularly those who are located so far from the business centre of the Society, Boston, as to make it expensive, and not always convenient, to attend; and such, believing that they could not receive an equivalent for their money, in becoming members, have wholly declined all connection. Others, who are excellent, stable-minded, staunch friends, and have exerted themselves to uphold the character of the Society, with veteran determination, have found themselves at times in embarrassment, in not being able to consult with a practitioner who does not belong to the Society—a certain by-law forbidding them to do so. All this has been discussed over and over again in the Council; and from a conviction that a modification of the Society was needed, and with a view of gathering into one fold all the respectable practitioners of the State, a committee was chosen at the February meeting of the Council, to digest a plan for the re-organization of the whole fabric of medical association in this ancient Commonwealth. Dr. John Ware, of Boston; Dr. Dalton, of Lowell; Dr. Peirson, of Salem; Dr. Childs, of Pittsfield; Dr. Lewis, and Dr. J. V. C. Smith, of Boston, were appointed, and held their first meeting April 7th, which was adjourned over to Monday the 12th, when a series of propositions were unanimously adopted, to be presented to the members on the next anniversary, for acceptance or rejection, as may then be decided. It is confidently expected, however, that the alterations proposed will meet the cordial concurrence of all parts of the State, and that harmony, prosperity, influence and usefulness will follow their adoption.

McClellan's Surgery.—Unfortunately the manuscript observations prepared for the Journal, relating to the Principles and Practice of Surgery, by the late George McClellan, M.D., of Philadelphia, were mislaid. This has occasioned delay in noticing the work, which, however, will soon be remedied.

Chelsea Marine Hospital.—A court of inquiry was in session last week, at the Custom House in Boston, in regard to the doings of the surgeon of the Marine Hospital, at Chelsea. Judge Merrick, of Worcester; Dr. Hooper, of Fall River; Wm. Sturgis, Esq., of Boston; and Dr. Mahan, of Washington, constitute the board. In the mean time, Dr. Loring, against whom charges of neglect of duty, &c., have been presented, is on his way to France, on leave of absence, from the Secretary of the Treasury, by whom the present meeting has been ordered. The case presents, therefore, some anomalies, since the accused is on the high seas, and bearer of government despatches, while undergoing a trial for neglect, &c. There were two distinct specifications, as we understand, viz., that the incumbent had neglected the duties of the office of surgeon, and that he was incompetent to discharge those duties. Dr. Loring is a gentlemanly, high-bred man, whose medical education wholly forbids the idea of incompetency in the discharge of his professional obligations. On the contrary, we imagine that it will be conceded everywhere, that he is an accomplished and thoroughly-taught physician and surgeon. With respect to the alleged neg-

lect of the institution, we have no knowledge. We hope that Dr. Loring will have the opportunity of meeting his opponents on his return, face to face, and that he will be successful in showing that he has conscientiously discharged all the labors that have devolved upon him in the administration of the affairs of the Hospital.

Medical Matters in Philadelphia.—We are happy to announce the election of George Fox, M.D., as Surgeon to the Pennsylvania Hospital in the place of the late Dr. Randolph.—Thomas F. Betton, M.D., has been appointed Professor of the Principles and Practice of Surgery, in the Franklin Medical College, in the place of C. C. Van Wyck, M.D., who resigns in consequence of intended removal from Philadelphia.—The number of matriculants in the Medical Department of the University of Pennsylvania, in 1847-8, as shown by the catalogue, was 508, of which 47 were graduates of this, and 18 of other institutions.—The catalogue of the Jefferson Medical College contains the names of 480 as attending the lectures, of whom 53 were graduates.—*Medical News.*

Ethereal Solution of Gun Cotton.—This new *Boston notion* bids fair to compete for celebrity with its predecessor, the letheon. From the fact that the advertising sheet of the Boston Journal is filled with advertisements for the sale of the new article, we infer that there is a brisk demand for it at Boston. We commend to the attention of our readers the communication in the eclectic department of this No., on the subject. Mr. Bigelow, we are informed, is a medical student. The honor of the discovery is contested by Mr. John P. Maynard, a fellow student of Mr. Bigelow. We trust the parentage of the new discovery will be settled with less discussion and ink-shed, than in the instance of the letheon.—*Buffalo Medical Journal.*

ERRATUM.—In last week's Journal, the name Dr. *Dickson* was unintentionally written, instead of Dixon. The error originated in not having the original manuscript at hand, and the pronunciation of the names being the same.

TO CORRESPONDENTS.—Dr. Williams's Medical Lecture has been received; also the continuation of Dr. Wallace's article on the Eye.—Prof. Shipman's report of cases will be thankfully received.—"W." recommends that a vote be taken, at the next annual meeting of the Massachusetts Medical Society, on the subject of excluding homeopathsists from the Society.

MARRIED.—At New York, Thomas C. Chalmers, M.D., to Miss M. Heard.

DIED.—In Glover, Vt., Dr. Frederick A. Garfield, 30.—At Canaan, Conn., Dr. Samuel Clessan, 65, formerly of Wayne Co., N. Y.—At Newark, N. J., Dr. John S. Condit, 47.—At Cincinnati, Dr. Taylor, of Allenville, shot while in the act, say the papers, of disinterring a body.

Report of Deaths in Boston—for the week ending April 15th, 57.—Males, 32—females, 25.—Bullborn, 3. Of consumption, 11—typhus fever, 2—lung fever, 2—scarlet fever, 4—infantile, 4—poison, 1—marasmus, 1—dropsy on the brain, 2—disease of the brain, 2—disease of the hip, 1—teething, 3—smallpox, 1—inflammation of the bowels, 1—convulsions, 1—pleurisy, 1—accidental, 1—croup, 3—paralysis, 1—measles, 1—disease of the liver, 2—debility, 2—dysentery, 1—inflammation of the lungs, 1—intemperance, 1—suicide, 1.

Under 5 years, 20—between 5 and 20 years, 9—between 20 and 40 years, 17—between 40 and 60 years, 6—over 60 years, 5.

Medical Miscellany.—An epidemic, known in Prussia by the name of "black small-pox," is committing great ravages in several towns of Upper Silesia; at first it attacked the poor, but has now spread to the higher classes.—A slight epidemic disease has shown itself at Poonah, in India, which is called there, the English cholera.—Dr. Bon-yun, the English Commissioner appointed to visit and report upon the condition of the various descriptions of immigrants, located on the several cultivated estates in Demerara, calculates that of 15,000 emigrants introduced into that colony at the public expense, nearly one half have been swept away by disease incidental to the climate.—Smallpox has appeared at Wellfleet, on Cape Cod.—Typhus fever has not shown itself in immigrant vessels yet; but as the season advances, and in the crowded condition in which they arrive in this country, its development is to be apprehended.—Medical lectures at the College in Quebec, will commence early in May, and continue till autumn. The opportunities for students are excellent. The French language may also be acquired by them.—Dr. Griffin, of Indiana, has recently been wounded in a duel.—Ezekiel Lane died at Buffalo, aged 102.—A. B. Shipman, M.D., and Daniel Meekins, M.D., have been appointed delegates to the meeting of the American Medical Association in Baltimore next month.

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Jan. 1.—Jan.